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MATHEMATICA
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Medicare Quality Monitoring System (MQMS): Measure Specification Compilation

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INTRODUCTION

This document is a compilation of the measure specifications found in Appendix A of each individual measure report. Each chapter includes the specifications for quality measures in each of eight clinical areas covered by the Medicare Quality Monitoring System (MQMS): utilization, acute myocardial infarction (AMI), heart failure, stroke, patient safety information (PSI), PQI, diabetes, and high-risk surgeries. Table 1, which appears on the following page, is a summary table that provides a roadmap to the specifications by measure (utilization/prevalence, readmission, mortality, mortality, length of stay, and cost).

Table 1: Summary Table

CHAPTER 1

SPECIFICATIONS FOR UTILIZATION

A. DEMOGRAPHIC CHARACTERISTICS OF MEDICARE BENEFICIARIES

Measure	Medicare beneficiaries
Cases	Same as population
Population	Medicare Part A enrollees on July 1 of the reference year
Computation	**Tables:** **Counts—**Number of enrollees in a stratum. **Charts:** **Numerator**— Number of enrollees in a stratum. **Denominator**— Number of enrollees in the population.
Rationale	Assessing the generalizability of the FFS population.
Data Source	*Health Care Financing Review, Medicare and Medicaid Statistical Supplements*, 1992-2001, Tables 6, 8, and 9.
Exclusions	Invalid (negative) or missing date of birth Date of death prior to the measurement year Beneficiaries residing outside of the United States as of March 31 of the year following the reference year except beneficiaries residing in Puerto Rico, Guam, and the Virgin Islands Missing or invalid values for state, sex, race, Medicare Status Refer to *Health Care Financing Review, Medicare and Medicaid Statistical Supplements*, for detailed exclusion criteria.
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Medicare eligibility status** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). ESRD, aged with ESRD, disabled with ESRD are combined in the charts in the text. **Dual enrollment** defined as enrolled in Medicare Part A and Medicaid at least one month during the calendar year. **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year

B. DEMOGRAPHIC CHARACTERISTICS OF THE FEE-FOR-SERVICE (FFS) POPULATION

Measure	Medicare FFS population
Cases	Same as population
Population	Eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	**Tables:** **Counts—**Number of enrollees in a stratum. **Charts:** **Numerator**— Number of enrollees in a stratum. **Denominator**— Number of enrollees in the population.
Rationale	Assessing the degree to which patterns of quality measures are due to changing demographic characteristics.
Data Source	Medicare Denominator File
Exclusions	Invalid (negative) or missing date of birth Date of death prior to the measurement year Beneficiaries residing outside of the United States as of March 31 of the year following the reference year except beneficiaries residing in Puerto Rico, Guam, and the Virgin Islands Missing or invalid values for state, sex, race, Medicare Status
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Medicare eligibility status** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). ESRD, aged with ESRD, disabled with ESRD are combined in the charts in the text. **Dual enrollment** defined as enrolled in Medicare Part A and Medicaid at least one month during the calendar year. **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year

C. DISCHARGE RATES FROM SHORT-STAY HOSPITALS BY PRINCIPAL DIAGNOSIS

Measure	Discharge rates by principal diagnosis
Cases	Same as population, by SDG.
Population	Eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	**Numerator—**Number of discharges in each Surveillance Diagnostic Group (SDG) SDGs are defined in Appendix C **Denominator—**Number of beneficiaries in the FFS population. Rates measured per 1,000 beneficiaries.
Rationale	Indicates health conditions of Medicare beneficiaries for prioritizing quality initiatives.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Age/sex adjusted rates of discharges by direct standardization using the Medicare Part A FFS population as of July 1, 1999, as the standard population.
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Medicare eligibility status** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). ESRD, aged with ESRD, disabled with ESRD are combined in the charts in the text. **Dual enrollment** defined as enrolled in Medicare Part A and Medicaid at least one month during the calendar year. **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the

	reference year **State** of the beneficiary's residence on March 31of the year following the reference year

D. DISCHARAGE RATES FROM SHORT-STAY HOSPITALS BY PROCEDURE

Measure	Discharge rates by procedure
Cases	Same as population, by SPG.
Population	Eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	**Numerator**—Number of discharges in each Surveillance Procedures Group (SPG). SPGs are defined in Appendix C. **Denominator—**Number of beneficiaries in the FFS population. Rates measured per 1,000 beneficiaries.
Rationale	Indicates health utilization of Medicare beneficiaries for selecting the medical procedures to monitor the quality of.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Age/sex adjusted rates of discharges by direct standardization using the Medicare Part A FFS population as of July 1, 1999, as the standard population.
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Medicare eligibility status** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). ESRD, aged with ESRD, disabled with ESRD are combined in the charts in the text. **Dual enrollment** defined as enrolled in Medicare Part A and Medicaid at least one month during the calendar year. **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural.

	Census region of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year

CHAPTER 2

SPECIFICATIONS FOR AMI

A. AMI Discharge Rates from Short-Stay Hospitals

Measure	Rate of AMI discharges from short-stay hospitals
Case Definition	AMI discharges are defined as claims with a principal diagnosis code of 410 (excluding 410.x2, subsequent episodes of care) Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: *Discharge level:* Number of AMI discharges *Beneficiary level:* Number of beneficiaries with at least one AMI discharge Denominator: Number of beneficiaries in the population Rates are expressed in thousands.
Rationale	Description of AMI utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always

	translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

B. AMI Average Length of Stay per AMI Discharge in Short-Stay Hospitals (in days)

Measure	Average length of stay per AMI discharge in short-stay hospitals, measured in days
Case Definition	AMI discharges are defined as claims with a principal diagnosis code of 410 (excluding 410.x2, subsequent episodes of care) Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year, who had at least one AMI discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Days per AMI hospitalization, based on admission and discharge date, with a maximum of 90. Denominator: Number of beneficiaries in the population.
Rationale	Description of AMI utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Length of stay is age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID. **Census division** of the provider state, based on the MedPAR provider ID. **State** of the provider state, based on the MedPAR provider ID. * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare

	data is a reasonably accurate indicator of beneficiary poverty.

C. MEDICARE AND BENEFICIARY PAYMENTS FOR AMI DISCHARGES

Measure	Medicare and Beneficiary Payments for AMI discharges
Case Definition	AMI discharges are defined as claims with a principal diagnosis code of 410 (excluding 410.x2, subsequent episodes of care) Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year, who had an AMI discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Total Medicare payments: Sum of Medicare program payments for all AMI discharges in the population Total Beneficiary payments: Sum of beneficiary coinsurance and deductible payments for all AMI discharges in the population Average Medicare Payments per Discharge: Numerator: sum of Medicare payments for all AMI discharges in the population Denominator: Number of AMI discharges in the population
Rationale	Description of AMI utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	None
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31of the year following the reference year, for Beneficiary Payments. **Census division** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31of the year following the reference year, for Beneficiary Payments. **State** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31of the year following the reference year, for Beneficiary Payments.

	* The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

D. AVERAGE NUMBER OF DISCHARGES AMONG BENEFICIARIES WITH AT LEAST ONE AMI DISCHARGE

Measure	Average number of discharges (all-cause and AMI) among beneficiaries with at least on AMI discharge
Case Definition	AMI discharges are defined as claims with a principal diagnosis code of 410 (excluding 410.x2, subsequent episodes of care) Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year, who had an AMI discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: *AMI:* number of AMI discharges in reference year *All-cause*: number of all discharges in reference year Denominator: Number of beneficiaries in the population
Rationale	Description of AMI utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	None
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary residence, as of March 31of the year following the reference year.

	Census division of the beneficiary residence, as of March 31of the year following the reference year. **State** of the beneficiary residence, as of March 31of the year following the reference year. * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

E. Beneficiary- And Discharge-Level Readmission Rates Following AMI Discharges

Measure	Beneficiary-level and discharge-level readmission rates following AMI discharges, by type of readmission (AMI or all-cause) and by days from discharge (2, 7, 30, 180, 365, and 730)
Case Definition	AMI discharges are defined as claims with a principal diagnosis code of 410 (excluding 410.x2, subsequent episodes of care) Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year, and enrolled in Part A and FFS for the full calendar year, who had an AMI discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Beneficiary-level: Numerator: Number of beneficiaries hospitalized for all causes/for AMI within 2, 7, 30, 180, 365, or 730 days of first AMI discharge in the reference year Denominator: Number of beneficiaries with at least one AMI discharge Discharge-level: Numerator: Number of beneficiaries hospitalized for all causes/for AMI within 2, 7, 30, 180, 365, or 730 days of each index AMI discharge in the reference year Denominator: Number of AMI discharges in the reference year. Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Beneficiary-level rates use the first AMI admission as the index admission; discharge-level rates use each AMI admission as an index admission. Readmissions include same-day readmissions to the same facility. Maryland readmission rates may not be comparable to those in other states. Maryland is the only state with a waiver from the CMS's prospective payment system. Due to Maryland's all-payer system, transfers may have been counted as readmissions, inflating readmission rates, especially short-term rates. Rates do not include beneficiaries who entered managed care or died within the window follow-up period.
Rationale	Description of AMI outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers Stratifiers (con't.)	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID. **Census division** of the provider state, based on the MedPAR provider ID. **State** of the provider state, based on the MedPAR provider ID. * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

F. MORTALITY RATES AMONG BENEFICIARIES WITH AN AMI HOSPITALIZATION

Measure	Mortality rates among beneficiaries with an AMI hospitalization
Case Definition	AMI hospitalizations are defined as claims with a principal diagnosis code of 410 (excluding 410.x2, subsequent episodes of care) Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year, and enrolled in Part A and FFS for the full calendar year, who had an AMI hospitalization. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Number of beneficiaries who died during the inpatient stay or within 2, 30, 180, 365, or 730 days from the day of the first (index) admission for AMI in the year Denominator: Number beneficiaries in the population Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Rate do not include beneficiaries who switched to managed care within the window follow-up period.
Rationale	Description of AMI outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID. **Census division** of the provider state, based on the MedPAR provider ID. **State** of the provider state, based on the MedPAR provider ID. * The Medicare data do not record true dual enrollment status but only whether a state

	Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

CHAPTER 3

SPECIFICATIONS FOR HEART FAILURE

A. HEART FAILURE DISCHARGE RATES, LENGTH OF STAY, AND COST

Measure	Rate of heart failure discharges from short-stay hospitals
Case Definition	Heart failure discharges are defined as claims with a principal diagnosis code of 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, and 428.9. The definition excludes patients with renal failure. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: *Discharge level:* Number of heart failure discharges *Beneficiary level:* Number of beneficiaries with at least one heart failure discharge Denominator: Number of beneficiaries in the population Rates are expressed in thousands.
Rationale	Description of heart failure utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age-sex–adjusted by using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization. State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992–2001

Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31 of the year following the reference year * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Average length of stay per heart failure discharge in short-stay hospitals, measured in days
Case Definition	Heart failure discharges are defined as claims with a principal diagnosis code of 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, and 428.9. The definition excludes patients with renal failure. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year who had at least one heart failure discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Days per heart failure hospitalization, based on admission and discharge date, with a maximum of 90 Denominator: Number of beneficiaries in the population
Rationale	Description of heart failure utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Length of stay is age-sex–adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization.

	State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID **Census division** of the provider state, based on the MedPAR provider ID **State** of the provider state, based on the MedPAR provider ID * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Medicare and beneficiary payments for heart failure discharges
Case Definition	Heart failure discharges are defined as claims with a principal diagnosis code of 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, and 428.9. The definition excludes patients with renal failure. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year who had a heart failure discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Total Medicare payments: Sum of Medicare program payments for all heart failure discharges in the population Total beneficiary payments: Sum of beneficiary coinsurance and deductible payments for all heart failure discharges in the population Average Medicare payments per discharge: Numerator: Sum of Medicare payments for all heart failure discharges in the population Denominator: Number of heart failure discharges in the population
Rationale	Description of heart failure utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms

	Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	None
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31 of the year following the reference year, for beneficiary payments **Census division** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31 of the year following the reference year, for beneficiary payments **State** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31 of the year following the reference year, for Beneficiary Payments * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Average number of discharges (all-cause and heart failure–specific) among beneficiaries with at least one heart failure discharge
Case Definition	Heart failure discharges are defined as claims with a principal diagnosis code of 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, and 428.9. The definition excludes patients with renal failure. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year who had a heart failure discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: *Heart failure:* Number of heart failure discharges in reference year *All-cause*: Number of all discharges in reference year Denominator: Number of beneficiaries in the population
Rationale	Description of heart failure utilization

Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	None
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary residence, as of March 31 of the year following the reference year **Census division** of the beneficiary residence, as of March 31 of the year following the reference year **State** of the beneficiary residence, as of March 31 of the year following the reference year * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

B. Specifications for Readmission Rates

Measure	Beneficiary and discharge-level readmission rates following heart failure discharges, by type of readmission (heart failure or all-cause) and by days from discharge (2, 7, 30, 180, 365, and 730)
Case Definition	Heart failure discharges are defined as claims with a principal diagnosis code of 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, and 428.9. The definition excludes patients with renal failure. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year and enrolled in Part A and FFS for the full calendar year who had a heart failure discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.

Computation	Beneficiary: Numerator: Number of beneficiaries hospitalized for all causes/for heart failure within 2, 7, 30, 180, 365, or 730 days of first heart failure discharge in the reference year Denominator: Number of beneficiaries with at least one heart failure discharge Discharge: Numerator: Number of beneficiaries hospitalized for all causes/for heart failure within 2, 7, 30, 180, 365, or 730 days of each index heart failure discharge in the reference year Denominator: Number of heart failure discharges in the reference year Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Beneficiary rates use the first heart failure admission as the index admission; discharge rates use each heart failure admission as an index admission. Readmissions include same-day readmissions to the same facility. Maryland readmission rates may not be comparable to those in other states. Maryland is the only state with a waiver from the CMS's prospective payment system. Due to Maryland's all-payer system, transfers may have been counted as readmissions, inflating readmission rates, especially short-term rates. Rates do not include beneficiaries who entered managed care or died within the window follow-up period. Readmissions are classified by the state of the *index* admission provider state, regardless of where the readmission occurs.
Rationale	Description of heart failure outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age-/sex-adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization. State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992–2001
Stratifiers	**Age** (0-54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID

	Census division of the provider state, based on the MedPAR provider ID **State** of the provider state, based on the MedPAR provider ID * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

C. Specifications for Mortality Rates

Measure	Beneficiary and discharge-level readmission rates following heart failure discharges, by type of readmission (heart failure or all-cause) and by days from discharge (2, 7, 30, 180, 365, and 730)
Case Definition	Heart failure discharges are defined as claims with a principal diagnosis code of 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, and 428.9. The definition excludes patients with renal failure. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year and enrolled in Part A and FFS for the full calendar year who had a heart failure discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Beneficiary: Numerator: Number of beneficiaries hospitalized for all causes/for heart failure within 2, 7, 30, 180, 365, or 730 days of first heart failure discharge in the reference year Denominator: Number of beneficiaries with at least one heart failure discharge Discharge: Numerator: Number of beneficiaries hospitalized for all causes/for heart failure within 2, 7, 30, 180, 365, or 730 days of each index heart failure discharge in the reference year Denominator: Number of heart failure discharges in the reference year Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Beneficiary rates use the first heart failure admission as the index admission; discharge rates use each heart failure admission as an index admission. Readmissions include same-day readmissions to the same facility. Maryland readmission rates may not be comparable to those in other states. Maryland is the only state with a waiver from the CMS's prospective payment system. Due to Maryland's all-payer system, transfers may have been counted as readmissions, inflating readmission rates, especially short-term rates. Rates do not include beneficiaries who entered managed care or died within the window follow-up period. Readmissions are classified by the state of the *index* admission provider state, regardless of where the readmission occurs.
Rationale	Description of heart failure outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age-/sex-adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization.

	State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992–2001
Stratifiers	**Age** (0-54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID **Census division** of the provider state, based on the MedPAR provider ID **State** of the provider state, based on the MedPAR provider ID * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

CHAPTER 4

SPECIFICATIONS FOR STROKE

A. Stroke Discharge Rates, Length of Stay, and Cost

Measure	Rate of discharges from short-stay hospitals for the following stroke cohorts: 1) A principal diagnosis of stroke/TIA; 2) A principal diagnosis of stroke; 3) A principal or secondary diagnosis of atrial fibrillation; and 4) Any procedure code indicating carotid endarterectomy (CEA)
Case Definition	Stroke-cohort discharges are defined as claims with diagnosis or procedure codes as specified in Appendix D. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have qualified otherwise are included.
Computation	Numerator: *Discharge level:* Number of stroke-cohort discharges *Beneficiary level:* Number of beneficiaries with at least one stroke-cohort discharge Denominator: Number of beneficiaries in the population Rates are expressed in thousands.
Rationale	Description of utilization for stroke
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age-sex–adjusted by using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization. State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998). The direct standardization method computes the weighted sum of the mean outcomes across the age-sex cells, using the proportion of the standard population in each cell as the weights. The indirect method, which is necessary when some age-sex cells are empty, is a ratio estimate in which the mean for the group of interest is estimated by multiplying the standard population mean by the ratio of the observed outcome for the population of interest to the expected outcome. The expected outcome is the weighted sum of outcomes for the standard population across the age-sex cells, using the distribution of the population of interest as the weights. Given the use of two standardization methods, state results are not directly comparable to national results.
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex**

	Reason for Medicare eligibility (aged without end-state renal disease [ESRD], disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31 of the year following the reference year * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Average length of stay per stroke-cohort discharge in short-stay hospitals, measured in days
Case Definition	Stroke-cohort discharges are defined as claims with diagnosis or procedure codes as specified in Appendix D. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year and who had at least one stroke-cohort discharge. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Sum of days for stroke-cohort hospitalization, based on admission and discharge date, with a maximum of 90 days Denominator: Number of stroke-cohort discharges in the population
Rationale	Description of stroke utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Length of stay is age-sex–adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization. State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998). The direct standardization method computes the weighted sum of the mean outcomes across the age-sex cells, using the proportion of the standard population in each cell as the weights. The indirect method, which is necessary when some age-sex cells are empty, is a ratio estimate in which the mean for the group of interest is estimated by multiplying the standard population mean by the ratio of the observed outcome for the population of interest to the expected outcome. The expected outcome is the weighted sum of outcomes for the standard population across the age-sex cells, using the distribution of the population of interest as the weights. Given the use of two standardization methods, state results are not directly comparable to national results.
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties

	are considered rural. **Census region** of the provider state, based on the MedPAR provider ID **State** of the provider state, based on the MedPAR provider ID * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Medicare and beneficiary payments for stroke-cohort discharges
Case Definition	Stroke-cohort discharges are defined as claims with diagnosis or procedure codes as specified in Appendix D. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year and who had a stroke-cohort discharge. Beneficiaries who died during the calendar year but who would have qualified otherwise are included.
Computation	Total Medicare payments: Sum of Medicare program payments for all stroke discharges in the population Total beneficiary payments: Sum of beneficiary coinsurance and deductible payments for all stroke discharges in the population Average Medicare payments per discharge: Numerator: Sum of Medicare payments for stroke-cohort discharges in the population Denominator: Number of stroke-cohort discharges in the population
Rationale	Description of stroke utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	None
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31 of the year following the reference year, for beneficiary payments **State** of the provider state, based on the MedPAR provider ID, for Medicare Payments, and of the beneficiary state, as of March 31 of the year following the reference year, for Beneficiary Payments

	* The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Average number of discharges (all-cause and stroke-cohort–specific) among beneficiaries with at least one stroke-cohort discharge
Case Definition	Stroke-cohort discharges are defined as claims with diagnosis or procedure codes as specified in Appendix D. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year and who had a stroke-cohort discharge. Beneficiaries who died during the calendar year but who would have qualified otherwise are included.
Computation	Numerator: *Stroke cohort:* Number of stroke-cohort (i.e., stroke/TIA, atrial fibrillation, and CEA as separate cohorts) discharges in reference year *All-cause*: Number of all discharges in reference year Denominator: Number of stroke-cohort beneficiaries in the population
Rationale	Description of stroke utilization
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	None
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary residence, as of March 31 of the year following the reference year **State** of the beneficiary residence, as of March 31 of the year following the reference

	year * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

B. SPECIFICATIONS FOR READMISSION RATES

Measure	Beneficiary and discharge-level readmission rates following discharges for stroke/TIA, atrial fibrillation, and CEA, by type of readmission (stroke or all-cause) and by days from discharge (2, 7, 30, 180, 365, and 730)
Case Definition	Stroke-cohort discharges are defined as claims with diagnosis or procedure codes as specified in Appendix D. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year and enrolled in Part A and FFS for the full calendar year and who had a stroke-cohort discharge. Beneficiaries who died during the calendar year but who would have qualified otherwise are included.
Computation	Beneficiary: Numerator: Number of beneficiaries hospitalized for all causes/for stroke only within 2, 7, 30, 180, 365, or 730 days of first stroke-cohort discharge in the reference year Denominator: Number of beneficiaries with at least one stroke-cohort discharge Discharge: Numerator: Number of beneficiaries hospitalized for all causes/for stroke only within 2, 7, 30, 180, 365, or 730 days of each index stroke-cohort discharge in the reference year Denominator: Number of stroke-cohort discharges in the reference year All-cause readmission rates are computed only for stroke/TIA while stroke only readmission rates are computed for stroke/TIA, atrial fibrillation, and CEA. Readmission windows for CEA are measured from the day of surgery, not discharge. Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Beneficiary rates use the first stroke-cohort admission as the index admission; discharge rates use each stroke- cohort admission as an index admission. Readmissions include same-day readmissions to the same facility. Maryland readmission rates may not be comparable to those in other states. Maryland is the only state with a waiver from the CMS's prospective payment system. Due to Maryland's all-payer system, transfers may have been counted as readmissions, inflating readmission rates, especially short-term rates. Rates do not include beneficiaries who entered managed care or died within the window follow-up period. Readmissions are classified by the state of the *index* admission provider state, regardless of where the readmission occurs.
Rationale	Description of stroke outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age-sex-adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population.

	1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization. State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998). The direct standardization method computes the weighted sum of the mean outcomes across the age-sex cells, using the proportion of the standard population in each cell as the weights. The indirect method, which is necessary when some age-sex cells are empty, is a ratio estimate in which the mean for the group of interest is estimated by multiplying the standard population mean by the ratio of the observed outcome for the population of interest to the expected outcome. The expected outcome is the weighted sum of outcomes for the standard population across the age-sex cells, using the distribution of the population of interest as the weights. Given the use of two standardization methods, state results are not directly comparable to national results.
Period	1992-2001 for all-cause readmission 1994–2001 for stroke only readmission due to coding inconsistencies for stroke-only prior to 1994.
Stratifiers	**Age** (0-54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID **State** of the provider state, based on the MedPAR provider ID * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

C. SPECIFICATIONS FOR MORTALITY RATES

Measure	Mortality rates among beneficiaries with a hospitalization for stroke/TIA and CEA
Case Definition	Stroke-cohort discharges are defined as claims with diagnosis or procedure codes as specified in Appendix D. Claims that reflect transfers (within one day) from acute-care, short-stay hospitals to other acute-care, short-stay hospitals were combined with the claim for the original hospital admission, using the diagnosis codes from the later admission.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year and enrolled in Part A and FFS for the full calendar year and who had a stroke-cohort hospitalization. Beneficiaries who died during the calendar year but who would have qualified otherwise are included.
Computation	Numerator: Number of beneficiaries who died within 2, 30, 180, 365, or 730 days from the day of the first (index) admission for stroke (and CEA) in the year Denominator: Number of beneficiaries with stroke/TIA (and CEA) discharges in the reference year Mortality windows for CEA are measured from the day of surgery, not admission. Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Rates do not include beneficiaries who switched to managed care within the window follow-up period.
Rationale	Description of stroke outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age-sex-adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National results are standardized with 18 age/sex groups using direct standardization. State results are standardized using indirect standardization due to smaller sample sizes. Both methods are described in Anderson et al. (1998). The direct standardization method computes the weighted sum of the mean outcomes across the age-sex cells, using the proportion of the standard population in each cell as the weights. The indirect method, which is necessary when some age-sex cells are empty, is a ratio estimate in which the mean for the group of interest is estimated by multiplying the standard population mean by the ratio of the observed outcome for the population of interest to the expected outcome. The expected outcome is the weighted sum of outcomes for the standard population across the age-sex cells, using the distribution of the population of interest as the weights. Given the use of two standardization methods, state results are not directly comparable to national results.
Period	1992–2001
Stratifiers	**Age** (0–54, 55–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, 95+) on July 1 of the reference year **Race** (white, black, other)

	Sex **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD) **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID **State** of the provider state, based on the MedPAR provider ID * The Medicare data do not record true dual-enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, copayments, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

CHAPTER 5

SPECIFICATIONS FOR PSI

A. PSI SPECIFICATIONS FOR ANESTHESIA REACTIONS AND COMPLICATIONS

Patient Safety Measure 1. Anesthesia Reactions and Complications.	
Rationale	This measure includes adverse reactions to anesthetic drugs and misplacement of breathing tubes (endotracheal tubes) for general anesthesia. High rates of such events may indicate problems with unsafe care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM diagnosis codes for **[anesthesia complications]** in any secondary diagnosis field. Denominator: All **[surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Discharges with codes for poisoning due to anesthetics *[E855.1, 968.1-4, 968.7]* AND any diagnosis code for **[active drug dependence], [active nondependent abuse of drugs],** or **[self- inflicted injury]**
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94,95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD. The categories

	aged with ESRD, disabled with ESRD, and ESRD only are grouped together as "ESRD") **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

B. PSI SPECIFICATIONS FOR DECUBITUS ULCERS

Patient Safety Measure 2. Decubitus Ulcers	
Rationale	Decubitus ulcers, also known as pressure ulcers or "bedsores" can be prevented through good nursing and medical care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code of 707.0 in any secondary diagnosis field. Denominator: All **[medical]** and **[surgical]** discharges with a length of stay of more than 4 days. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Discharges in MDC 9 or with any diagnosis of **[hemiplegia, paraplegia, or quadriplegia]**. Patients admitted from a [**long term care facility**].
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD. The categories

	aged with ESRD, disabled with ESRD, and ESRD only are grouped together as "ESRD") **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

C. PSI SPECIFICATIONS FOR FOREIGN BODY LEFT IN DURING PROCEDURE

Patient Safety Measure 3. Foreign Body Left In During Procedure	
Rationale	The accidental leaving behind of medical equipment or objects following a procedure should virtually never occur.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for **[foreign body left in during procedure]** in any secondary diagnosis field. Denominator: All **[medical]** and **[surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD. The categories aged with ESRD, disabled with ESRD, and ESRD only are grouped together as "ESRD") **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in

	at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

D. PSI SPECIFICATIONS FOR IATROGENIC PNEUMOTHORAX

Patient Safety Measure 4. Iatrogenic Pneumothorax	
Rationale	Iatrogenic Pneumothorax means accidental lung puncture (pneumothorax) from medical care (iatrogenic). Most cases of iatrogenic pneumothorax occur during the insertion of intravenous catheters into the great veins of the heart through the neck area. High rates may indicate problems with care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code of 512.1 in any secondary diagnosis field. Denominator: All **[medical]** and **[surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Discharges with any diagnosis of **[trauma]** Discharges with any code indicating **[thoracic surgery]** or **[lung or pleural biopsy]** or **[cardiac surgery]**. Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex**

	Reason for Medicare eligibility (aged, disabled, and ESRD. The categories aged with ESRD, disabled with ESRD, and ESRD only are grouped together as "ESRD") **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

E. PSI SPECIFICATIONS FOR INFECTION DUE TO MEDICAL CARE

Patient Safety Measure 5. Selected Infections Due to Medical Care	
Rationale	This measure includes infections due to indwelling medical devices such as catheters. Such infections can be prevented with good medical care and surveillance.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code of 999.3 or 996.62 in any secondary diagnosis field. Denominator: All **[medical]** and **[surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Discharges with any diagnosis code for **[immunocompromised]** state or **[cancer]**. Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD,

	disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

F. PSI SPECIFICATIONS FOR POSTOPERATIVE HEMORRHAGE OR HEMATOMA

Patient Safety Measure 6. Postoperative Hemorrhage or Hematoma	
Rationale	High rates of severe bleeding (hemorrhage) or large collections of blood in the body (hematoma) following surgery may indicate problems with care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for **[postoperative hemorrhage]** or **[postoperative hematoma]** in any secondary diagnosis field AND code for postoperative **[control of hemorrhage]** or **[drainage of hematoma]** in any secondary procedure code field, among surgical discharges. Procedure code for postoperative control of hemorrhage or hematoma must occur on the same day or after the principal procedure. Denominator: All **[surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	All obstetric admissions (MDC 14 and 15) Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex**

	Reason for Medicare eligibility (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

G. PSI SPECIFICATIONS FOR POSTOPERATIVE HIP FRACTURE

Patient Safety Measure 7. Postoperative Hip Fracture	
Rationale	Elderly patients are prone to confusion and agitation following anesthesia and surgery. Good nursing and medical care can prevent injuries from such problems. A high rate of accidental falls with severe injury (hip fracture) after surgery may indicate problems with care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code for **[hip fracture]** in any secondary diagnosis among surgical discharges. Denominator: All **[surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Patients who have musculoskeletal and connective tissue diseases (MDC 8). Patients with principal diagnosis codes for **[seizure]**, **[syncope]**, **[stroke]**, **[coma]**, **[cardiac arrest]**, **[poisoning]**, **[trauma]**, **[delirium and other psychoses]**, or **[anoxic brain injury]**. Patients with any diagnosis of **[metastatic cancer]**, **[lymphoid malignancy]** or **[bone malignancy]**, **[self-inflicted injury]**. Patients 17 years of age and younger. Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

H. PSI SPECIFICATIONS INPATIENT HIP FRACTURE

Patient Safety Measure 8. Inpatient Hip Fracture	
Rationale	Elderly patients are prone to confusion and agitation during hospitalization. Good nursing and medical care can prevent injuries from such problems. A high rate of accidental falls with severe injury (hip fracture) may indicate problems with care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code for **[hip fracture]** in any secondary diagnosis. Denominator: All **[medical]** and **[surgical]** discharges. Rates are expressed in events per 1,000 discharges
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Patients 17 years of age and younger. Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

I. PSI SPECIFICATIONS FOR POSTOPERATIVE METABOLIC OR PHYSIOLOGIC DERANGEMENT

Patient Safety Measure 9. Postoperative Metabolic or Physiologic Derangement	
Rationale	The measure includes the development of uncontrolled diabetes or acute kidney failure following elective surgeries. High rates of such events may indicate problems with care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for **[physiologic and metabolic derangements]** in any secondary diagnosis field among surgical discharges. Discharges with acute renal failure (subgroup of **[physiologic and metabolic derangements]**) must be accompanied by a procedure code for dialysis (39.95, 54.98). Denominator: All **[elective] [surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Patients with both a diagnosis code of ketoacidosis, hyperosmolarity or other coma (subgroups of physiologic and metabolic derangements coding) AND a principal diagnosis of **[diabetes]**. Patients with both a secondary diagnosis code for acute renal failure (subgroup of **[physiologic and metabolic derangements]** coding) AND a principal diagnosis of **[acute myocardial infarction]**, **[cardiac arrhythmia]**, **[cardiac arrest]**, **[shock]**, **[hemorrhage]** or **[gastrointestinal hemorrhage]**. All obstetric admissions (MDC 14 and 15). Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under

	age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

J. PSI SPECIFICATIONS FOR POSTOPERATIVE RESPIRATORY FAILURE

Patient Safety Measure 10. Postoperative Respiratory Failure	
Rationale	This measure includes the acute development of the inability to breathe or the failure of lung function (such as requiring a mechanical ventilator) following elective surgeries. High rates of such events may indicate problems of care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for acute respiratory failure (518.81 or 518.84) in any secondary diagnosis field among surgical discharges.. Denominator: All **[elective] [surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Patients with respiratory or circulatory diseases (MDC 4 and MDC 5). All obstetric admissions (MDC 14 and 15) Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94,95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD,

	disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

K. PSI SPECIFICATIONS FOR POSTOPERATIVE SEPTICEMIA

Patient Safety Measure 11. Postoperative Septicemia	
Rationale	High rates of severe or overwhelming infection (septicemia) following elective surgeries may indicate problems of care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code for **[sepsis]** in any secondary diagnosis field among population at risk. Denominator: All **[elective] [surgical]** discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Patients with a principal diagnosis of **[infection]**, or any code for **[immunocompromised]** state, or **[cancer]**. Patients with a length of stay of three days or less. All obstetric admissions (MDC 14 and 15). Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other)

	Sex **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

L. PSI SPECIFICATIONS FOR POSTOPERATIVE WOUND DEHISCENCE

Patient Safety Measure 12. Postoperative Wound Dehiscence	
Rationale	This measure include the reopening or splitting apart of surgical wounds following surgery on the abdomen or pelvis. A high rate of such events may indicate a problem with care.
Population	Beneficiaries eligible for Medicare in January of calendar years 2000 and 2001, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during either calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for reclosure of postoperative disruption of abdominal wall (54.61) in any secondary procedure field. Denominator: All **[abdominopelvic]** surgical discharges. Rates are expressed in events per 1,000 discharges.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status All obstetric admissions (MDC14 and 15). Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	For subgroup comparisons, rates are age/sex adjusted using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. There are two subgroups that are missing some of the age groups-Aged Only, which has no cases less than age 65, and Disabled Only, which has no cases over age 65. Applying weights from the standard population to these subgroups would result in misleadingly low rates, since the weights to not add up to one because of the missing age cells. The rates of these two subgroups have been "reinflated" by dividing by the proportions in the standard population of the corresponding age groups. Thus, age-sex adjusted rates for the Aged Only subgroup have been divided by the proportion of those over age 65 in the standard population (0.8453), and age-sex adjusted rates for the Disabled Only subgroup have been divided by the proportion of those under age 65 (0.1547).
Period	2000-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD).

	Dual enrollment defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

CHAPTER 6

SPECIFICATIONS FOR PQI

Preventable Hospitalization Measure 1. Congestive Heart Failure (CHF)	
Rationale	Early identification of symptoms and administration of medication, such as diuretics to reduce fluid retention, can prevent worsening of CHF, and potentially avoid hospitalization.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with selected ICD-9-CM diagnosis codes for **[congestive heart failure]** in as the principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as number of discharges per 100,000 beneficiaries
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates) Discharges with codes for selected **[cardiac procedures]**
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 2. Bacterial Pneumonia	
Rationale	Hospitalization rates for pneumonia among Medicare beneficiaries should be reduced with access to proper preventive treatment (vaccination for pneumococcal pneumonia) and outpatient care (antibiotics).
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with selected ICD-9-CM codes for **[bacterial pneumonia]**as the principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as number of discharges per 100,000 beneficiaries
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates) Discharges with ICD-9-CM codes for **[sickle cell anemia and HB-S disease]**
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 3. Chronic Obstructive Pulmonary Disease (COPD)	
Rationale	Early identification of symptoms and effective administration of medication such as inhalers, oral antibiotics, or oral steroids can prevent worsening of COPD, and potentially avoid hospitalization.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for **[COPD]** as the principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 Medicare beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates)
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 4. Urinary Tract Infection (UTI)	
Rationale	Hospitalization is a potentially preventable outcome of UTI. In many cases, this condition can be treated effectively with antibiotics on an outpatient basis without need for hospitalization, especially if identified early in the course of disease.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with selected ICD-9-CM codes for **[UTI]** as the principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates)
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 5. Dehydration	
Rationale	Without access to proper care and attention to fluid status in non-hospital settings, elderly patients with dehydration may require hospitalization .
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code 276.5 as the principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 Medicare beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates)
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 6. Angina Without Procedure	
Rationale	Angina is a condition prevalent in the elderly that can often be managed effectively in an outpatient setting. Angina that results in hospital admission without procedure is potentially avoidable through outpatient medication and treatment.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for **[angina]** as the principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 Medicare beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates)
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 7. Long-Term Complications of Diabetes	
Rationale	Effective management of diabetes (control of blood sugar levels) and early identification of complications can reduce the likelihood of worsening conditions that require hospitalizations, such as eye and renal disease and neurological and circulatory disorders.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code for **[long-term complication of diabetes]** as a principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 Medicare beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates)
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 8. Lower extremity amputation for diabetes	
Rationale	Effective management of diabetes (blood sugar levels) and early identification of complications can reduce the likelihood of hospitalization for limb amputation.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for **[lower extremity amputation]** in any diagnosis field and ICD-9-CM codes for **[diabetes]** in any field. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 Medicare beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates) Discharges with ICD-9-CM procedure codes for **[trauma]**
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 9. Short-term complications of diabetes	
Rationale	Early diagnosis and treatment of diabetes, including control of blood sugar levels, on an outpatient basis, should lower rates of hospitalization for short-term complications of diabetes.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM codes for **[short-term complications of diabetes]** as the principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 Medicare beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates)
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, and ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Preventable Hospitalization Measure 10. Uncontrolled Diabetes	
Rationale	Early diagnosis and treatment of diabetes, including control of blood sugar levels, on an outpatient basis, should lower rates of hospitalization for uncontrolled diabetes.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Discharges with ICD-9-CM code for **[uncontrolled diabetes]** as a principal diagnosis. Denominator: All Medicare fee-for-service beneficiaries. Rates are expressed as the number of discharges per 100,000 Medicare beneficiaries.
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims Transfer from other institutions MDC 14 (pregnancy, childbirth, and pueperium) and MDC 15 (newborns and neonates)
Adjustment	Age/sex adjusted rates of events using 18 age/sex groups and the Medicare Part A FFS population as of July 1, 1999 as the standard population. National-level results are adjusted with using the direct method. All of the state-level rates are age and sex adjusted using the indirect method of standardization because of the small numbers of events in several states. Both methods are described in Anderson et al. (1998).
Period	1995-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged, disabled, ESRD, aged with ESRD, disabled with ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **Census division** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

CHAPTER 7

SPECIFICATIONS FOR DIABETES

A. DIABETES PROCESS OF CARE MEASURES (M7)

Measure	Rate of HbA1C testing
Case Definition	HbA1C tests are defined as claims with a CPT code of 83036.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for an HbA1C test. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of the utilization of HbA1C tests that monitor the degree of blood glucose control during the past three months.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of lipid profiling
Case Definition	Lipid profiling is defined as claims with CPT code 80061 or the following three CPT codes on the same day: 82465, 83718, and 84478.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for a lipid profiling. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of lipid profiling utilization. Recommended cholesterol-LDL level for people with diabetes is <100 mg/dl.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Length of stay is age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the provider state, based on the MedPAR provider ID. **Census division** of the provider state, based on the MedPAR provider ID. **State** of the provider state, based on the MedPAR provider ID. * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of self-monitoring

Case Definition	Self-monitoring is defined as claims with a CPT code of 82962 or HCPCS code A4253 or E0607.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for self-monitoring. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of the utilization of self-monitoring devices: glucose monitors, test strips, and lancets.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of self-management training
Case Definition	Self-management training is defined as claims with HCPCS code G0108 (1998-2001) or G0109 (1998-2001) or revenue center code 0942.

Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for self-management training. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of utilization of diabetes outpatient self-management training services and other education/training services including diabetes diet training.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of eye examination
Case Definition	Eye examination is defined as CPT code 67101, 67105, 67107, 67108, 67110, 67112, 67141, 67145, 67208, 67210, 67218, 67227, 67228, 92002, 92004, 92012, 92014, 92018, 92019, 92225, 92226, 92230, 92235, 92240, 92250, or 92260. The following CPT code with provider specialty code 18 or 41 are also included: 90000-90080, 99201-99205, 99211-99215, 90640-90643, 99241-99245
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for eye examination. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of utilization of eye examination, which are recommended annually for diabetics.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of microalbumin screening
Case Definition	Microalbumin screening is defined as claims with CPT code 82043 or 82044.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for microalbumin screening. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of utilization of microalbumin screening to detect kidney damage that may lead to leakage of protein.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of podiatry visits
Case Definition	A podiatry visit is defined as principal or secondary ICD-9 diagnosis claims code 25000-25093 when accompanied by provider specialty code 48.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for a podiatry visit. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of utilization of podiatry visits. To detect poor circulation and nerve damage to the lower extremities, annual podiatry visits are recommended for diabetics.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of use of therapeutic shoes
Case Definition	Therapeutic shoes are defined by HCPCS claims A5500-A5507.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for therapeutic shoes. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of utilization of therapeutic shoes that help prevent and minimize diabetes associated foot problems.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

B. DIABETES PROGRESSION OF DISEASE MEASURES (M7)

Measure	Rate of cellulitis as a primary diagnosis
Case Definition	Cellulitis is defined by ICD-9 diagnosis code 681.1, 682.10, 682.11, 682.6, or 682.7.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for cellulitis as a principal diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of cellulitis as a principal diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of cellulitis as a secondary diagnosis
Case Definition	Cellulitis is defined by ICD-9 diagnosis code 681.1, 682.10, 682.11, 682.6, or 682.7.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for cellulitis as a secondary diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of cellulitis as a secondary diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of cutaneous gangrene
Case Definition	Cutaneous gangrene is defined by ICD-9 diagnosis code 785.4.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for cutaneous gangrene. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of cutnaeous gangrene among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of osteomyelitis
Case Definition	Osteomyelitis is defined by ICD-9 diagnosis code 730.05, 730.06, 730.07, 730.15, 730.16, 730.17, 730.25, 730.26, or 730.27.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for osteomyelitis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of osteomyelitis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of arthropathy associated with neurological disorders and peripheral neuropathy
Case Definition	Arthopathy associated with neurological disorders/peripheral neuropathy is defined by ICD-9 diagnosis code 337.1, 357.2, 358.1, or 713.5.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for arthropathy associated with neurological disorders/peripheral neuropathy. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of arthropathy associated with neurological disorders and peripheral neuropathy.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of diabetes with peripheral circulatory disorders
Case Definition	Diabetes with peripheral circulatory disorders is defined by ICD-9 diagnosis code 440.2x, 422.3, 443.81, 4343.9, 444.22, or 453.8.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for diabetes with peripheral circulatory disorders. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of diabetes with peripheral circulatory disorders among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of lower limb amputations
Case Definition	Lower limb amputation is defined by CPT code 28800, 28805, 288810, 28820, 28825, 27880, 27881, 27882, 27886, 27888, 27591, 27592, 27594, 27596, 27598 or ICD-9 procedure code 84.10-84.17.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for lower limb amputation. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of lower limb amputations among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of incision and drainage below fascia with or without tendon sheath involvement
Case Definition	Incision and drainage below fasica is defined by CPT code 27603, 27604, 26990, 26991, 27301, 27310, 28002, 28003, 28020, 28022, 28024 or ICD-9 procedure code 83.01, 83.02, 83.03, 83.09.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for incision and drainage below fascia. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of incision and drainage below fascia among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of incision and drainage of bone cortex
Case Definition	Incision and drainage of bone cortex is defined by CPT code 26992, 27303, 28005 or ICD-9 procedure code 77.14-77.18.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for incision and drainage of bone cortex. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of incision and drainage of bone cortex among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Skin and subcutaneous debridement for gangrene
Case Definition	Skin and subcutaneous debridement for gangrene is defined by CPT code 11000, 11011, 11040, 11041, 11042 combined with ICD-9 diagnosis code 785.4 or ICD-9 procedure code 86.28 combined with ICD-9 diagnosis code 785.4.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for skin and subcutaneous debridement for gangrene. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of skin and subcutaneous debridement of gangrene among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of new end-stage renal disease (ESRD)
Case Definition	New ESRD is identified by comparing Medicare Status code in the denominator file of current year to Medicare Status code of previous year.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with new ESRD. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of new ESRD among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of nephropathy
Case Definition	Nephropathy is defined by ICD-9 diagnosis code 581.81 or 583.81.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for nephropathy. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of nephropathy among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of retinopathy
Case Definition	Retinopathy is defined by ICD-9 diagnosis code 362.01 or 362.02.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for retinopathy. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of retinopathy among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of blindness
Case Definition	Blindness is defined by ICD-9 diagnosis code 369.0-369.9.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for blindness. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of blindness among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of diabetic cataract
Case Definition	Diabetic cataract is defined by ICD-9 diagnosis code 366.41.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for diabetic cataract. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of diabetic cataract among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of glaucoma
Case Definition	Glaucoma is defined by ICD-9 diagnosis code 365.44 or 365.9.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for glaucoma. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of glaucoma among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of macular edema
Case Definition	Macular edema is defined by ICD-9 diagnosis code 362.83.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for macular edema. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of macular edema among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of laser eye treatment
Case Definition	Laser eye treatment is defined by CPT code 67210, 67220, 67228 or ICD-9 procedure code 14.23-14.25.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for laser eye treatment. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of laser treatment among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for stroke as the principal diagnosis
Case Definition	Hospitalization for stroke is defined by ICD-9 diagnosis code 362.34, 433.00, 433.01, 433.10, 433.11, 433.20, 433.21, 433.30, 433.31, 433.80, 433.81, 433.90, 433.91, 434.00, 434.01, 434.10, 434.11, 434.90, 434.91, 435.0, 435.1, 435.3, 435.8, 435.9, or 436. Additional codes for years 1992-1998 include: 433.0, 433.1, 433.2, 433.3, 433.8, 433.9, 434.0, 434.1, 434.9, 435.2.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for stroke as the principal diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for stroke as the principal diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for stroke as a secondary diagnosis
Case Definition	Hospitalization for stroke is defined by ICD-9 diagnosis code 362.34, 433.00, 433.01, 433.10, 433.11, 433.20, 433.21, 433.30, 433.31, 433.80, 433.81, 433.90, 433.91, 434.00, 434.01, 434.10, 434.11, 434.90, 434.91, 435.0, 435.1, 435.3, 435.8, 435.9, or 436. Additional codes for years 1992-1998 include: 433.0, 433.1, 433.2, 433.3, 433.8, 433.9, 434.0, 434.1, 434.9, 435.2.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for stroke as a secondary diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for stroke as a secondary diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for acute myocardial infarction (AMI) as the principal diagnosis
Case Definition	Hospitalization for AMI is defined by ICD-9 diagnosis codes 410.00, 410.01, 410.10, 410.11, 410.20, 410.21, 410.30, 410.31, 410.40, 410.41, 410.50, 410.51, 410.60, 410.61, 410.70, 410.71, 410.80, 410.81, 410.90 and 410.91.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for AMI as the principal diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for AMI as the principal diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for acute myocardial infarction (AMI) as a secondary diagnosis
Case Definition	Hospitalization for AMI is defined by ICD-9 diagnosis codes 410.00, 410.01, 410.10, 410.11, 410.20, 410.21, 410.30, 410.31, 410.40, 410.41, 410.50, 410.51, 410.60, 410.61, 410.70, 410.71, 410.80, 410.81, 410.90 and 410.91.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for AMI as a secondary diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for AMI as a secondary diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for heart failure as the principal diagnosis
Case Definition	Hospitalization for heart failure is defined by ICD-9 diagnosis code 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.2, or 428.9.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for heart failure as the principal diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for heart failure as the principal diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for heart failure as a secondary diagnosis
Case Definition	Hospitalization for heart failure is defined by ICD-9 diagnosis code 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.2, or 428.9.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for heart failure as a secondary diagnosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for heart failure as a secondary diagnosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for CABG
Case Definition	Hospitalization for CABG is defined by ICD-9 procedure code 36.1, 36.10-36.19.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for CABG. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for CABG among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of progression to PTCA

Case Definition	Progression to PTCA is defined by ICD-9 procedure code 36, 36.01, 36.02, 36.05, 36.06 or CPT code 92980, 92981, 92982, 92984.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for PTCA. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for PTCA among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of admission to an emergency department or observation bed for metabolic crisis
Case Definition	Admission to an emergency department or observation bed for metabolic crisis is defined by principal or secondary ICD-9 diagnosis code 251.0, 250.1, 250.10-250.13, 250.2, 250.20-250.23, 250.3, 250.30-250.33 accompanied by revenue center code 045X, 0762, or 0981.

Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for admission to an emergency department or observation bed for metabolic crisis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of admission to an emergency department or observation bed for metabolic crisis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for diabetes without mention of complication
Case Definition	Hospitalization for diabetes without mention of complication is defined by principal diagnosis code 250.0, 250.00-250.03.

Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for diabetes without mention of complications. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for diabetes without mention of complications among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for diabetes with ketoacidosis
Case Definition	Hospitalization for diabetes with ketoacidosis is defined by principal ICD-9 diagnosis code 250.1, 250.10-250.13.

Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for diabetes with ketoacidosis. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for diabetes with ketoacidosis among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for diabetes with hyperosmolarity
Case Definition	Hospitalization for diabetes with hyperosmolarity is defined by principal ICD-9 diagnosis code 250.2, 250.20-250.23.

Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for diabetes with hyperosmolarity. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for diabetes with hyperosmolarity among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for diabetes with other coma
Case Definition	Hospitalization for diabetes with other coma is defined by principal ICD-9 diagnosis code 250.3, 250.30-250.33.

Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for diabetes with other coma. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of diabetes with other coma among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for diabetes with other complication
Case Definition	Hospitalization for diabetes with other complication is defined by principal ICD-9 diagnosis code 250.4, 250.40-250.43, 250.5, 250.50-250.53, 250.6, 250.60-250.63, 250.7, 250.70-250.73, 250.8, 250.80-250.83, 250.9, 250.90-250.93.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for diabetes with other complication. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for diabetes with other complication.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Rate of hospitalization for lower extremity amputation
Case Definition	Rate of hospitalization for lower extremity amputation is defined by inpatient ICD-9 procedure code 84.10-84.17.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for lower limb amputation. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for lower limb amputation.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.
Measure	Rate of hospitalization for a femoral-bypass procedure
Case Definition	Hospitalization for a femoral-bypass procedure is defined by inpatient ICD-9 procedure code 39.25, 39.29, 39.50, 39.28 (1992-1998), 39.59 (1992-1998), 39.90 (1992-1998).

Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A and Part B for the full year, not enrolled in Medicare managed care at any point in the year, with a principal or secondary diagnosis of diabetes, and with at least one acute face-to-face claim or at least two non-acute face-to-face claims that are at least seven days apart. Diabetes diagnosis codes include 250*, 3572*, 3620*, and 36641 (where * stands for any code at the fourth or fifth position). Please refer to Appendix C for detailed list of diabetes diagnosis codes, acute face-to-face claims codes, and non-acute face-to-face claims codes.
Computation	Numerator: Number of eligible diabetic beneficiaries with at least one claim for hospitalization for a femoral-bypass procedure. Denominator: Number of eligible diabetic beneficiaries in the population. Rates are expressed per 1,000 diabetic beneficiaries.
Rationale	Description of occurrence of hospitalization for a femoral-bypass procedure among diabetic Medicare beneficiaries.
Data Sources	5% Standard Analytical Files Denominator File CMS Cross-Reference File
Exclusions	Residence outside of the United States, except for diabetic beneficiaries residing in Puerto Rico and the Virgin Islands Invalid values for birth, state, sex, race, Medicare Status Evidence of gestational diabetes (indicated by diagnosis code of 6480* or 6488*, where * stands for any code in the fifth position)
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001
Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.[1] **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year [1] The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

CHAPTER 8

SPECIFICATIONS FOR CARDIOVASCULAR HIGH-RISK SURGERIES

A. DISCHARGE RATE, READMISSION RATE, AND MORTALITY RATE

Measure	Rate of discharges from short-stay hospitals
Case Definition	Depends on the surgery. See Section B, which includes Case selection criteria for each surgery.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Number of surgical discharges in a 3-year period Denominator: Number of beneficiaries in the population in a 3-year period Rates are expressed in thousands.
Rationale	Description of surgery use
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001. The first year reported is 1994, which includes the years 1992 to 1994.

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Beneficiary-level readmission rates following surgical discharges, by type of readmission (for all causes) within 30 days of discharge
Case Definition	Depends on the surgery. See Section B, which includes Case selection criteria for each surgery.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year, and enrolled in Part A and FFS for the full calendar year, who had a discharge for the relevant. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Number of beneficiaries hospitalized for all causes within 30 days of first surgical discharge in a year during a 3-year period Denominator: Number of beneficiaries with at least one surgical discharge in a year during a 3-year period Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Readmissions include same-day readmissions to the same facility. Maryland readmission rates may not be comparable to those in other states. Maryland is the only state with a waiver from the CMS's prospective payment system. Due to Maryland's all-payer system, transfers may have been counted as readmissions, inflating readmission rates, especially short-term rates. Rates do not include beneficiaries who entered managed care or died within the window follow-up period.
Rationale	Description of surgical outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001. The first year reported is 1994, which includes the years 1992 to 1994.

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Mortality rates among beneficiaries with a surgical hospitalization
Case Definition	Depends on the surgery. See Section B, which includes Case selection criteria for each surgery.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year, and enrolled in Part A and FFS for the full calendar year, who had a discharge for the relevant. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Number of beneficiaries who died within 30 days from the day of the first (index) surgical procedure in the year during a 3 year period Denominator: Number of beneficiaries receiving surgery each year in a 3 year period Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Rate do not include beneficiaries who switched to managed care within the window follow-up period.
Rationale	Description of surgical outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001. The first year reported is 1994, which includes the years 1992 to 1994.

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

CHAPTER 9

SPECIFICATIONS FOR CANCER-RELATED HIGH-RISK SURGERIES

A. DISCHARGE RATE, READMISSION RATE, AND MORTALITY RATE

Measure	Rate of discharges from short-stay hospitals
Case Definition	Depends on the surgery. See Section B, which includes Case selection criteria for each surgery.
Population	Beneficiaries eligible for Medicare in January of each calendar year, enrolled in Part A for the full year, and not enrolled in Medicare managed care at any point in the year. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Number of surgical discharges in a 3-year or 5-year period Denominator: Number of beneficiaries in the population in a 3-year or 5-year period Rates are expressed in thousands.
Rationale	Description of surgery use
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001. For 3-year averages, the first year reported is 1994, which includes the years 1992 to 1994. For 5-year averages, 1996 is the first year.

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Beneficiary-level readmission rates following surgical discharges, by type of readmission (for all causes) within 30 days of discharge
Case Definition	Depends on the surgery. See Section B, which includes Case selection criteria for each surgery.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year, and enrolled in Part A and FFS for the full calendar year, who had a discharge for the relevant. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Number of beneficiaries hospitalized for all causes within 30 days of first surgical discharge in a year during a 3-year or 5-year period Denominator: Number of beneficiaries with at least one surgical discharge in a year during a 3-year or 5-year period Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Readmissions include same-day readmissions to the same facility. Maryland readmission rates may not be comparable to those in other states. Maryland is the only state with a waiver from the CMS's prospective payment system. Due to Maryland's all-payer system, transfers may have been counted as readmissions, inflating readmission rates, especially short-term rates. Rates do not include beneficiaries who entered managed care or died within the window follow-up period.
Rationale	Description of surgical outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001. For 3-year averages, the first year reported is 1994, which includes the years 1992 to 1994. For 5-year averages, 1996 is the first year.

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year **Hospital volume quintile** based on the number of similar procedures performed at the index provider during a 3-year or 5-year period. See Section C. * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.

Measure	Mortality rates among beneficiaries with a surgical hospitalization
Case Definition	Depends on the surgery. See Section B, which includes Case selection criteria for each surgery.
Population	Medicare beneficiaries eligible for Medicare in January of each calendar year, and enrolled in Part A and FFS for the full calendar year, who had a discharge for the relevant. Beneficiaries who died during the calendar year but who would have otherwise qualified are included.
Computation	Numerator: Number of beneficiaries who died within 30 days from the day of the first (index) surgical procedure in the year during a 3-year or 5-year period Denominator: Number of beneficiaries receiving surgery each year in a 3-year or 5-year period Rates are expressed in thousands. Rates with numerators of 25 or less are suppressed in tables. Rate do not include beneficiaries who switched to managed care within the window follow-up period.
Rationale	Description of surgical outcomes
Data Sources	MedPAR File Denominator File CMS Cross-Reference File
Exclusions	Missing or invalid values for state, sex, race, Medicare Status Discharges from all hospitals other than short-stay hospitals Duplicate records Discharges from stand-alone emergency rooms Discharges with invalid procedure codes Discharges for Medicare beneficiaries whose Health Insurance Claim Number (HICNO) does not have a match in CMS's Cross-Reference File Overlapping beneficiary acute-care, short-stay hospital claims
Adjustment	Rates are age/sex adjusted using the Medicare Part A FFS population as of July 1, 1999, as the standard population. National-level results are standardized with 18 age/sex groups using direct standardization. State-level results are standardized using indirect standardization, due to smaller sample sizes. Both methods are described in Anderson et al. (1998).
Period	1992-2001. For 3-year averages, the first year reported is 1994, which includes the years 1992 to 1994. for 5-year averages, 1996 is the first year.

Stratifiers	**Age** (0-54, 55-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94, 95+) on July 1 of the reference year. **Race** (white, black, other) **Sex** **Reason for Medicare eligibility** (aged without ESRD, disabled without ESRD, ESRD). **Dual enrollment** defined as enrolled in Medicare Part A and with Medicaid buy-in at least one month during the calendar year.* **Urban/rural** based on the metropolitan statistical area (MSA) and Bureau of Economic Analysis (BEA) State and County Crosswalk File developed for the CMS' Prospective Payment System. All counties in an MSA are designated as urban; all other counties are considered rural. **Census region** of the beneficiary's residence on March 31 of the year following the reference year **State** of the beneficiary's residence on March 31of the year following the reference year **Hospital volume quintile** based on the number of similar procedures performed at the index provider during a 3-year or 5-year period. See Section C. * The Medicare data do not record true dual enrollment status but only whether a state Medicaid program pays the beneficiary's Medicare premiums, co-pays, and deductibles. The payment of these Medicare expenses by Medicaid does not always translate into full Medicaid coverage. Nevertheless, the buy-in indicator in the Medicare data is a reasonably accurate indicator of beneficiary poverty.